IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s):	Asamoto et al.
Docket No.:	JP920000045
Serial No.:	09/918,256
Filing Date:	July 30, 2001
Group:	2151
Examiner:	Frantz B. Jean
Title:	Network System, Communication Device, and Communication Routing Method

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APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants hereby appeal the final rejection dated March 15, 2006, of claims 1 through 18 of the above-identified patent application.

REAL PARTY IN INTEREST

The present application is assigned to International Business Machines Corporation, as evidenced by an assignment recorded on October 10, 2001 in the United States Patent and Trademark Office at Reel 012276, Frame 0103. The assignee, International Business Machines Corporation, is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1 through 18 are presently pending in the above-identified patent application. Claims 1-18 are rejected under 35 U.S.C. §102(e) as being anticipated by Spaur et al. (United States Patent Number 6,516,192) Claims 1-3, 7-9, 13-15, and 17 are being appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

In one exemplary embodiment, a network system for transferring data from a server to a client over either one of a two-way communication line and a one-way communication line is disclosed, the two-way communication line transmitting data between the server and the client bidirectionally and the one-way communication line transmitting data in only one direction from the server to the client, comprising: means for measuring data transfer rates of the two-way communication line and of the one-way communication line (pages 8 to 12); and means for selecting one from the two-way communication line and the one-way communication line on the basis of the measured data transfer rates (pages 10 to 15).

In one exemplary embodiment, one communication line from the two-way communication line and the one-way communication line is presently used for data transfer, wherein the other communication line from the two-way communication line and the one-way communication line is not presently used for data transfer, and wherein the means for measuring data transfer rates comprises: means for requesting the server to transfer required data over the other communication line not presently used for data transfer (pages 10 to 15); and means for determining total time taken to transfer required data over the communication line presently used for data transfer and for determining total time taken to transfer the required data over the communication line not presently used for data transfer (pages 9 to 15).

In one exemplary embodiment, the means for determining total time taken to transfer required data over the communication line presently used for data transfer and

for determining the total time taken to transfer the required data over the communication line not presently used for data transfer comprises: means for measuring transfer latency expressing a time lag between a sending of a request to the server for data transfer and a time the required data begins to be received by the client (pages 9 to 12); means for determining transfer time taken to transfer the required data based on the measured transfer rate and data volume of the required data (pages 9 to 12); and means for determining total time taken to transfer the required data based on the determined transfer time and the transfer latency (pages 9 to 12).

In one exemplary embodiment, a communication device for receiving data from a server over either one of a two-way communication line and a one-way communication line is disclosed, the two-way communication line transmitting data between a server and a client bidirectionally and the one-way communication line transmitting data in only one direction from the server to the client, comprising: means for measuring data transfer rates of the two-way communication line and of the one-way communication line (pages 8 to 12); and means for selecting one from the two-way communication line and the one-way communication line on the basis of the measured data transfer rates (pages 10 to 15).

In one exemplary embodiment, one communication line from the two-way communication line and the one-way communication line is presently used for data transfer, wherein the other communication line from the two-way communication line and the one-way communication line is not presently used for data transfer, and wherein the means for measuring data transfer rates comprises: means for requesting the server to transfer the required data over the other communication line not presently used for data transfer (pages 10 to 15); and means for measuring total time taken to transfer required data over the communication line presently used for data transfer and for determining total time taken to transfer the required data over the communication line not presently used for data transfer (pages 9 to 15).

In one exemplary embodiment, the means for measuring total time taken to transfer required data over the communication line presently used for data transfer and for determining total time taken to transfer the required data over the communication line not presently used for data transfer comprises: means for measuring transfer latency

expressing a time lag between the sending of a request to the server for data transfer and the time the required data begins to be received by the client (pages 9 to 12); means for determining transfer time taken to transfer the required data based on the measured transfer rate and data volume of the required data (pages 9 to 12); and means for determining total time taken to transfer the required data based on the determined transfer time and the transfer latency (pages 9 to 12)

In one exemplary embodiment, a communication routing method for selecting a communication route for transferring data from a server to a client over either one of a two-way communication line for transmitting data between the server and the client bidirectionally and a one-way communication line for transmitting data in only one direction from the server to the client is disclosed, comprising the steps of: measuring data transfer rates of the two-way communication line and the one-way communication line (pages 8 to 12); and selecting one from the two-way communication line and the one-way communication line on the basis of the measured data transfer rates (pages 10 to 15).

In one exemplary embodiment, one communication line from the two-way communication line and the one-way communication line is presently used for data transfer, wherein the other communication line from the two-way communication line and the one-way communication line is not presently used for data transfer, and wherein the step of measuring data transfer rates comprises: requesting the server to transfer the required data over the other communication line not presently used for data transfer (pages 10 to 15); and determining total time taken to transfer required data over the communication line presently used for data transfer and determining total time taken to transfer the required data over the communication line not presently used for data transfer (pages 9 to 15)

In one exemplary embodiment, the step of determining total time taken to transfer required data over the communication line presently used for data transfer and determining total time taken to transfer the required data over the other communication line, comprises performing the following steps for each of the communication line presently used for data transfer and communication line not presently used for data transfer: measuring transfer latency expressing a time lag between a sending of a request

to the server for data transfer and a time the required data begins to be received by the client (pages 9 to 12); measuring the transfer rate of the required data (pages 10 to 15); determining transfer time taken to transfer the required data based on the measured transfer rate and data volume of the required data (pages 9 to 12); and determining total time taken to transfer the required data based on the determined transfer time and the transfer latency (pages 9 to 12).

In one exemplary embodiment, the step of switching to the communication line not presently used comprises: requesting the server to transfer data over the faster communication line not presently used, in parallel with the data transfer over the slower communication line presently used (pages 8 to 15); and canceling data transfer over the slower communication line at the point that total data transfer volume over the faster communication line catches up with total data transfer volume over the slower communication line (pages 8 to 15).

STATEMENT OF GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-18 are rejected under 35 U.S.C. §102(e) as being anticipated by Spaur et al.

ARGUMENT

Independent Claims 1, 7 and 13

Independent claims 1, 7, and 13 are rejected under 35 U.S.C. §102(e) as being anticipated by Spaur et al. Regarding claim 1, the Examiner asserts that Spaur teaches measuring data transfer rates of the two-way communication line and of the one-way communication line (col. 4, lines 41-54; col. 5, lines 60-65). In the Response to Arguments Section of the final Office Action, the Examiner asserts that Spaur teaches bandwidth (data transfer rate measurement), and that "the weighting vector is mathematically combined or otherwise utilized with the channel parameter value to calculate a suitability sub-value for the bandwidth parameter." The Examiner further asserts that Applicant teaches in the specification (page 9, 3rd-4th paragraphs) that "the data transfer rate is judged by estimated total time (including latency/jitter) taken to transfer required data."

Applicants note that Spaur utilizes the bandwidth ***specified*** *for a network channel* to determine the link selection. (See, FIG. 3 and col. 11, lines 22-34.) The bandwidths of 14.4 kbps and 28.8 kbps are standard bandwidth rates of network channels, as would be apparent to a person of ordinary skill in the art. Applicants also note that bandwidth parameters that are *specified* and ***not*** *measured* are conventionally utilized in the art.

Regarding the Examiner's noting that the "weighting vector is mathematically combined or otherwise utilized with the channel parameter value to calculate a suitability sub-value for the bandwidth parameter," Applicants note that Spaur is teaching that ***values are calculated, not measured***.

Regarding the Examiner's comments on page 9 of the present specification, Applicants note that the present disclosure teaches that

> a data transfer rate is judged by estimating total time taken to transfer required data. MPU 14 determines the total time taken to transfer the required data over the communication line, which is presently used for data transfer and also requests the server 20 to transfer the required data over the other communication line, which is not presently used for data transfer, to determine the total transfer time of the required data over the other communication line.
>
> The total transfer time is determined by adding transfer latency which is a time lag between the sending of a request to the server 20 for data transfer and the time the required data begins to be received by the client 10. The transfer time taken to transfer the whole of the required data is determined by the transfer rate and the volume or size of the required data. The transfer rate is determined by the data transfer volume received within a given measurement time after the beginning of reception of the required data.
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> (Page 9, 3rd-4th paragraphs.)

Applicants note that, while the measurement of a data transfer rate may include components such as latency and jitter, a determination of latency and/or jitter cannot be considered a determination of a data transfer rate, as would be apparent to a person of ordinary skill in the art.

Thus, Spaur suggests measuring other network parameters, "such as packet loss, latency and/or jitter" (col. 11, lines 36-37; see, also, col. 10, lines 7-10, and col. 4, lines 42-47), but does ***not*** *disclose or suggest measuring the bandwidth (data transfer rate) of a network channel*. Independent claims 1, 7, and 13 require *measuring*

data transfer rates of the two-way communication line and of the one-way communication line; and selecting one from the two-way communication line and the one-way communication line on the basis of the *measured data transfer rates*.

Thus, Spaur et al. do not disclose or suggest measuring data transfer rates of the two-way communication line and of the one-way communication line; and selecting one from the two-way communication line and the one-way communication line on the basis of the measured data transfer rates, as required by independent claims 1, 7, and 13.

Claims 2, 3, 8, 9, 14 and 15

Claims 2, 3, 8, 9, 14 and 15 are rejected under 35 U.S.C. §102(e) as being anticipated by Spaur et al. Regarding claim 2, the Examiner asserts that Spaur discloses means for determining total time taken to transfer required data over the communication line presently used for data transfer and for determining total time taken to transfer the required data over the communication line not presently used for data transfer (col. 10, lines 15-40; col. 12, lines 24-37).

As noted above, the present disclosure teaches that "the total transfer time is determined by adding transfer latency which is a time lag between the sending of a request to the server 20 for data transfer and the time the required data begins to be received by the client 10." Applicants could find no disclosure or suggestion by Spaur of a *total transfer time*, as defined in the present disclosure. Claims 2, 3, 8, 9, 14, and 15 require *determining or measuring* ***total time*** *taken to transfer required data over the communication line presently used for data transfer and determining or measuring* ***total time*** *taken to transfer the required data over the communication line not presently used for data transfer*.

Thus, Spaur et al. do not disclose or suggest determining or measuring total time taken to transfer required data over the communication line presently used for data transfer and determining or measuring total time taken to transfer the required data over the communication line not presently used for data transfer, as required by claims 2, 3, 8, 9, 14, and 15.

Claim 17

Claim 17 is rejected under 35 U.S.C. §102(e) as being anticipated by Spaur et al. In particular, the Examiner asserts that Spaur discloses requesting the server to transfer data over the faster communication line not presently used, in parallel with the data transfer over the slower communication line presently used (col. 8, lines 6-63).

Applicants, however, could find no disclosure or suggestion by Spaur of requesting the server to transfer data over the faster communication line not presently used, ***in parallel*** with the data transfer over the slower communication line presently used.

Thus, Spaur et al. do not disclose or suggest requesting the server to transfer data over the faster communication line not presently used, in parallel with the data transfer over the slower communication line presently used, as required by claim 17.

Conclusion

The rejections of the cited claims under section 102 in view of Spaur et al. are therefore believed to be improper and should be withdrawn. The remaining rejected dependent claims are believed allowable for at least the reasons identified above with respect to the independent claims.

The attention of the Examiner and the Appeal Board to this matter is appreciated.

Respectfully,

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APPENDIX

1. A network system for transferring data from a server to a client over either one of a two-way communication line and a one-way communication line, the two-way communication line transmitting data between the server and the client bidirectionally and the one-way communication line transmitting data in only one direction from the server to the client, comprising:

means for measuring data transfer rates of the two-way communication line and of the one-way communication line; and

means for selecting one from the two-way communication line and the one-way communication line on the basis of the measured data transfer rates.

2. The network system according to claim 1, wherein one communication line from the two-way communication line and the one-way communication line is presently used for data transfer, wherein the other communication line from the two-way communication line and the one-way communication line is not presently used for data transfer, and wherein the means for measuring data transfer rates comprises:

means for requesting the server to transfer required data over the other communication line not presently used for data transfer; and

means for determining total time taken to transfer required data over the communication line presently used for data transfer and for determining total time taken to transfer the required data over the communication line not presently used for data transfer.

3. The network system according to claim 2, wherein the means for determining total time taken to transfer required data over the communication line presently used for data transfer and for determining the total time taken to transfer the required data over the communication line not presently used for data transfer comprises:

means for measuring transfer latency expressing a time lag between a sending of a request to the server for data transfer and a time the required data begins to be received by the client;

means for determining transfer time taken to transfer the required data based on the measured transfer rate and data volume of the required data; and

means for determining total time taken to transfer the required data based on the determined transfer time and the transfer latency.

4. The network system according to claim 1, wherein one communication line from the two-way communication line and the one-way communication line is presently used for data transfer, wherein the other communication line from the two-way communication line and the one-way communication line is not presently used for data transfer, and wherein the means for selecting one from the two-way communication line and the one-way communication line comprises:

means for comparing the two-way communication line with the one-way communication line in data transfer rate; and

means for switching the communication line presently used for data transfer to the communication line not presently used for data transfer when the data transfer rate of the communication line not presently used for data transfer is faster than the data transfer rate of the communication line presently used.

5. The network system according to claim 1, wherein the one-way communication line includes a satellite communication line.

6. The network system according to claim 1, wherein the data transfer rates are periodically measured at a predetermined time interval.

7. A communication device for receiving data from a server over either one of a two-way communication line and a one-way communication line, the two-way communication line transmitting data between a server and a client bidirectionally and the one-way communication line transmitting data in only one direction from the server to the client, comprising:

means for measuring data transfer rates of the two-way communication line and of the one-way communication line; and

means for selecting one from the two-way communication line and the one-way communication line on the basis of the measured data transfer rates.

8. The communication device according to claim 7, wherein one communication line from the two-way communication line and the one-way communication line is presently used for data transfer, wherein the other communication line from the two-way communication line and the one-way communication line is not presently used for data transfer, and wherein the means for measuring data transfer rates comprises:

means for requesting the server to transfer the required data over the other communication line not presently used for data transfer; and

means for measuring total time taken to transfer required data over the communication line presently used for data transfer and for determining total time taken to transfer the required data over the communication line not presently used for data transfer.

9. The communication device according to claim 8, wherein the means for measuring total time taken to transfer required data over the communication line presently used for data transfer and for determining total time taken to transfer the required data over the communication line not presently used for data transfer comprises:

means for measuring transfer latency expressing a time lag between the sending of a request to the server for data transfer and the time the required data begins to be received by the client;

means for determining transfer time taken to transfer the required data based on the measured transfer rate and data volume of the required data; and

means for determining total time taken to transfer the required data based on the determined transfer time and the transfer latency.

10. The communication device according to claim 7, wherein one communication line from the two-way communication line and the one-way communication line is presently used for data transfer, wherein the other communication line from the two-way communication line and the one-way communication line is not presently used for data transfer, wherein the means for selecting one from the two-way communication line and the one-way communication line comprises:

means for comparing the two-way communication line with the one-way communication line in data transfer rate; and

means for switching the communication line presently used for data transfer to the communication line not presently used when the data transfer rate of the communication line not presently used for data transfer is faster than the data transfer rate of the communication line presently used

11. The communication device according to claim 7, wherein the one-way communication line comprises a satellite communication line.

12. The communication device according to claim 7, wherein the data transfer rate is periodically measured at a predetermined time interval.

13. A communication routing method for selecting a communication route for transferring data from a server to a client over either one of a two-way communication line for transmitting data between the server and the client bidirectionally and a one-way communication line for transmitting data in only one direction from the server to the client, comprising the steps of:

measuring data transfer rates of the two-way communication line and the one-way communication line; and

selecting one from the two-way communication line and the one-way communication line on the basis of the measured data transfer rates.

14. The communication routing method according to claim 13, wherein one communication line from the two-way communication line and the one-way

communication line is presently used for data transfer, wherein the other communication line from the two-way communication line and the one-way communication line is not presently used for data transfer, and wherein the step of measuring data transfer rates comprises:

requesting the server to transfer the required data over the other communication line not presently used for data transfer; and

determining total time taken to transfer required data over the communication line presently used for data transfer and determining total time taken to transfer the required data over the communication line not presently used for data transfer.

15. The communication routing method according to claim 14, wherein the step of determining total time taken to transfer required data over the communication line presently used for data transfer and determining total time taken to transfer the required data over the other communication line, comprises performing the following steps for each of the communication line presently used for data transfer and communication line not presently used for data transfer:

measuring transfer latency expressing a time lag between a sending of a request to the server for data transfer and a time the required data begins to be received by the client;

measuring the transfer rate of the required data;

determining transfer time taken to transfer the required data based on the measured transfer rate and data volume of the required data; and

determining total time taken to transfer the required data based on the determined transfer time and the transfer latency.

16. The communication routing method according to claim 13, wherein one communication line from the two-way communication line and the one-way communication line is presently used for data transfer, wherein the other communication line from the two-way communication line and the one-way communication line is not

presently used for data transfer, and wherein the step of selecting one from the two-way communication line and the one-way communication line comprises:

comparing the two-way communication line with the one-way communication line in data transfer rate; and

switching the communication line used for data transfer to the communication line not presently used when the data transfer rate of the communication line not presently used is faster than the data transfer rate of the communication line presently used

17. The communication routing method according to claim 16, wherein the step of switching to the communication line not presently used comprises:

requesting the server to transfer data over the faster communication line not presently used, in parallel with the data transfer over the slower communication line presently used; and

canceling data transfer over the slower communication line at the point that total data transfer volume over the faster communication line catches up with total data transfer volume over the slower communication line.

18. The communication routing method according to claim 13, wherein the data transfer rates are measured periodically at a predetermined time interval.

EVIDENCE APPENDIX

There is no evidence submitted pursuant to § 1.130, 1.131, or 1.132 or entered by the Examiner and relied upon by appellant.

RELATED PROCEEDINGS APPENDIX

There are no known decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 CFR 41.37.